

coal. May not advantage of this material, therefore, be taken for lighting economically towns situate in the neighbourhood of the peat districts?—or, indeed, since means have been found for compressing the turf almost to the density of coal, an export trade in the commodity may be hoped for.

Even from the rushes which abound so luxuriantly in bogs and other marshes, a beautiful fabric may be woven; and some dressed specimens prepared for weaving which I lately saw in the possession of a foreigner, appeared to possess all the strength of the best flax, with the rich gloss of silk.

While on the subject of the uses to which peat may be applied, allow me to say that the nature and origin of the vast tracts of waste, both in this country and throughout the entire of Europe, to which we have given the term bog in general, ought to be a matter of peculiar interest, whether to the geologist or botanist; and, from careful observations, made in numerous sections of those of Ireland, on the classification, position, and structure of the various trees, plants, shrubs, &c., found therein, and comparing the same with the brown coal common in many parts of Germany, containing timber in so perfect a state as to serve for the manufacture of various articles of household furniture, I have every reason to conclude that what we now term peat bogs are simply the younger formations of immense coal-fields, awaiting only volcanic influence to entomb the mass, which, when submitted to intense pressure, the action of sulphur jets, and other mineral productions, aided by the agency of time, the mysterious revealer of events, may become the great basis of the wealth of the commercial world, coal.

Thus, after the lapse of ages, another revolution awaits the buried elements of nature, for the requirements of man compel him to dive deep into the bowels of the earth for the treasure he neglected while upon its surface. By combustion he may change the form and quality of the exhumed mineral, but destruction he cannot effect—the gases liberated by fire hasten to perfect new and wonderful combinations—obeying the fiat of the omnipotent Creator—"increase and multiply." The new system of drying the turf (which at present is but little understood) by means of constant currents of air at a moderate temperature evenly sustained by a simple and economical application of heat, is answering well. It is now generally admitted, that in a humid climate, to depend upon atmospheric drying alone is at least precarious, if not wholly unprofitable, when the operations become extensive.

CHARLES GEOGHEGAN.

* An improvement in the mode of burning the peat into charcoal is much needed: the patented kilns are eminently defective. We have seen the drawing of a kiln devised for the purpose by Mr. Geoghegan, the writer of the above communication, which seems to have great advantages, and ought, we think, to come into use. The great value and importance of the material is only beginning to be understood.—Ed.

GREEK AND ROMAN ANTIQUITIES.*

THERE was long wanting in our language a correct and ample dictionary of Greek and Roman antiquities: we had out-grown *Adam's Account of the Manners and Customs of the Romans*; and beyond this there was nothing to be found in a connected form. It was reserved for Dr. Smith to produce a work which gives a perfect knowledge of "That city of the Cæsars, the mistress of the world," and of its teacher State, which, having checked the westward progress of Asiatic dominion, and given to the universe faultless models in every species of literature and art, was eventually compelled to succumb to the prowess of its rival's arms. It is too late now to point out that Dr. Smith has produced, by careful examination of original authority, with such aids as could be derived from the best modern

writers—making the results of present day research available for the purpose of instruction—a standard work, containing the most extensive information on the highly interesting and important subject of which it treats. We may say, however, that the second edition now before us contains so many additions and improvements, that it must be regarded to a considerable extent as a new work.

Opening the volume, to give our readers an idea of the system adopted by the learned Doctor and his able coadjutors, we fall on the word *paries* (*τοιχος*), the wall of a house, in contradistinction to *murus* (*τριχος*), the wall of a city, a fortification-wall, in fact.

Among the various methods employed by the ancients in constructing walls we find first spoken of the *Paries cratitius*, or wattled wall, made of canes or hurdles covered with clay, of which, in the original Roman city, entire houses were formed. Mention is also made of dried lumps of clay built into walls, strengthened by means of horizontal bond timber; and in districts where wood abounded, log-houses were common, constructed after the fashion of those at present in the back settlements of America,—trunks of trees partially squared, piled one on the other, the interstices being filled with either moss or clay. But these were, as civilisation advanced, succeeded by the use of brick or stone; this latter, either in the shape of irregular masonry, the wall being built of stones, which were not squared or cut into any exact form, or as the *emplecton* or complicated wall, consisting in fact of three walls joined together, each side presenting regular masonry; the interior being filled with rubble; the two outside shells rendered firm and durable by large stones or courses of brickwork extending at intervals through the whole structure.

Vitruvius tells us the mode universally adopted in his time was the *reticulata structura*, resembling network. It consisted in placing square or lozenge-shaped stones side by side upon their edges, the stones being of small dimensions and cemented by mortar. Walls thus constructed were considered more pleasing to the eye, but less substantial than those in which the stones lay flat. The front of the wall was the only part in which the structure was regular, or the stones cut into a certain form; the interior being rubble work or stone chippings imbedded in mortar. Only part of the wall was reticulated: to give it firmness and durability the sides and base were built of brick or squared stones, and horizontal courses of bricks were laid at intervals, extending through the length and thickness of the wall. In many cases the mortar has proved more durable than the stone, especially where volcanic tufa is the material employed, as at Baia, in the Bay of Naples, and in the Villa of Hadrian, near Tivoli.

Annexed (Fig. 1) is an engraving of a wall of this sort from the drawing of a wall at Pompeii by Mr. Mocatta.

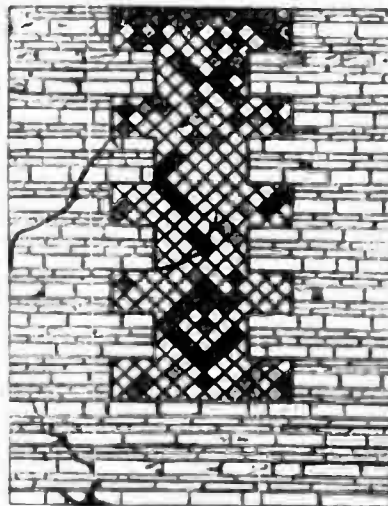


FIG. 1.

But the most perfect wall, especially when built of marble, was the *paries e lapide quadrato*

or sabbler wall, consisting entirely of stones cut and squared by the chisel. The construction of such was carried to the highest perfection by the architects of Greece; the temples of Athens, Corinth, and many cities of Asia Minor still attesting in their ruins the extreme skill bestowed on their erection. Considerable excellence in this art must have been attained by the Greeks even as early as the age of Homer, who derives one of his similes from the "nicely fitted stones" of the wall of a house. But probably in this the Greeks only copied the Asiatics, for Xenophon came to a deserted city in Mesopotamia, the brick walls of which were capped by a parapet of "polished shell marble."

The accompanying cut (fig. 2) shows to what an extent the Romans introduced arches in their buildings, not only where openings were needed, but where they could serve no other use than to strengthen the wall. It represents a portion of the supposed *Therma* at Trèves.

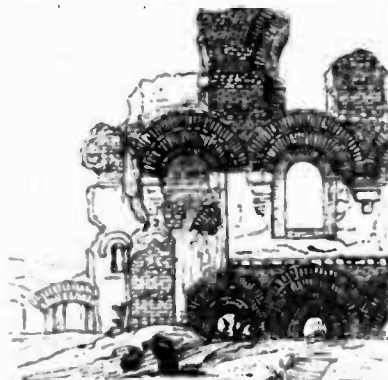


FIG. 2.

Walls were adorned, especially in the interior of buildings, in a great variety of ways. However coarse and rough their construction might be, unevenness was removed by a coating of plaster with rough cast, consisting of sand, together with stone, brick, and marble, broken and ground to various degrees of fineness. Gypsum, also, in the state which we call plaster of Paris, was much used in the more splendid edifices, decorated with an endless variety of tasteful devices, in bas-relief or fresco. Another method of decorating walls was by encrusting them with slabs of marble—an art of high antiquity, probably in its origin Oriental. The brick walls of the Mausoleum at Halicarnassus were covered with slabs of Proconnesian marble; and this is the most ancient example upon record.

Mausoleum being our last word of any import, we turn to the page in our dictionary where we may expect to find it: we are there told that the original building was the production of the piety of a wealthy queen, and of the skill of the great artists of the later Ionian and Attic schools of architecture and sculpture. Mausolus, the Dynast of Caria, having died B.C. 353, his queen Artemisia evinced her sorrow by observing his funeral rites with the most expensive splendour, and by commencing the erection of a sepulchral monument to him at Halicarnassus, which should surpass anything the world had yet seen. Pliny is the only writer who gives anything like a complete description of the edifice; but even in this account there are considerable difficulties. The building, he tells us, extended 63 feet from north to south, being shorter on the fronts, and its whole circuit was 411 feet (or, according to the Bamberg MS., 440 feet); it rose to the height of 25 cubits (37½ feet) and was surrounded by thirty-six columns. This part of the building was called *Pteron*. It was adorned with sculptures in relief, on its eastern face by Icopas, on its northern by Bryaxis, on the southern by Timotheus, and on the western by Leochares. Above this *pteron* was a pyramid equal to it in height, diminishing by twenty-four steps to its summit, which was surmounted by the marble quadriga made by Pythis. The total height, including this ornament, was 140 feet. The only way of accounting for the discrepancy

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